

PATENT
YOR920000854US1 IBM-200

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Gareth Hougham
Serial Number : 09/809,440
Filing Date : March 15, 2001
Examiner : Monica A. Fontaine.
Group Art Unit : 1732
For : POST CURE HARDENING OF
SILOXANE STAMPS FOR
MICROCONTACT PRINTING

TO: The Honorable Commissioner of Patents
and Trademarks
Post Office Box 1450
Alexandria, VA 22313-1450

37 C.F.R. 1.131, DECLARATION TO OVERCOME CITED PATENT AND PUBLICATION

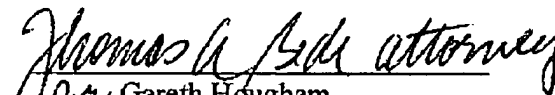
I, Gareth Hougham, declare and state as follows:

1. I am employed as a scientist at the International Business Machines Corporation, Thomas J. Watson Research Center, located in Yorktown Heights, New York;
2. I am the sole inventor in the above-identified patent application bearing Application Serial Number 09/809,440 which was filed March 15, 2001;
3. During the course of the prosecution of the above-identified application, there were two references cited as prior art which allegedly together with another reference, render the claims unpatentable based upon a rejection of the claims pursuant to 35 U.S.C. §103(a);
4. The first reference is entitled "*The Rubber Formulary*" by Ciullo and Hewett which bears a copyright date of 1999, referring only to the year and no specific month and/or date;
5. The second reference is United States Patent 6,422,528 to Domeier, et al. which bears a filing date of January 17, 2001;

6. I completed the invention embodied in the claims presently pending in the instant application, before the publication date of the printed publication to Ciullo and Hewett in 1999, and before the filing date of United States Patent 6,422,528 to Domeier, et al.
7. I prepared an invention disclosure form on March 2, 1999 which contained a written disclosure of the invention as embodied in the claims.
8. In order to corroborate my assertions set forth herein, I attach as Exhibit 1, a copy of the above-noted write-up, which establishes that I had conceived and reduced to practice the invention as claimed.

I hereby declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful, false statements may jeopardize the validity of any patent that may issue on the above-identified application.

September 17, 2004


for Gareth Hougham

YOR8-1999-0148 Post cure hardening of vinyl addition cured siloxane stamps for microcontact printing - continued

**Disclosure YOR8-1999-0148**

Prepared for and/or by an IBM Attorney - IBM Confidential

Created By: Gareth Hougham Created On: 03/02/99 06:34:19 PM

Required fields are marked with the asterisk (*) and must be filled in to complete the form.

***Title of disclosure (In English)**

Post cure hardening of vinyl addition cured siloxane stamps for microcontact printing

Summary

IDT Team:

Attorney/Patent Professional:

Daniel P Morris/Watson/IBM

***Main Idea**

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

The fabrication of large-area but fine-featured microcontact printing stamps involves molding a relief pattern into the stamp, and presents severe material science challenges by requiring both extreme pattern accuracy and finely-tuned mechanical properties. The reaction of the molding compound during cure can

EXHIBIT. 1

YOR8-1999-0148 Post cure hardening of vinyl addition cured siloxane stamps for microcontact printing - continued

be carried out at any temperature from room temperature up to about 120 degrees C. There are advantages and disadvantages associated with any choice of temperature for this cure. If the cure is carried out at room temperature, the dimensions of the pattern can be made to exactly match those of the mold "master". Maintaining this true dimension is critical because such stamps are often used to define the circuitry pattern in multilayer structures where subsequent layers of circuitry will have to exactly register with it. The dimensions can be kept true if cured at room temperature because there is no CTE expansion and contraction to distort the pattern. On the other hand, material hardness is another important feature of the stamp and the siloxane hardness is greater when cured at higher temperatures.

The present invention defines a way to achieve dimensional accuracy and desired hardness. This is achieved by doing a preliminary cure at room temperature to define the geometry of the pattern, followed by a high temperature post cure. Although the stamp will expand as defined by its CTE upon this post cure, it is at this point a durable elastomer, and will fully rebound to the original dimensions upon cooling. Thus, both desirable characteristics can be achieved without sacrificing the other.

2. How does the invention solve the problem or achieve an advantage, (a description of "the invention", including figures inline as appropriate)?

3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?

4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.